Amendments to the Claims

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

1-26. (Canceled)

27. (Currently amended) A method of making a tire, the tire comprising a carcass structure and at least one circumferentially inextensible annular structure, comprising:

forming at least one carcass ply of the carcass structure;

wherein forming the at least one carcass ply comprises:

forming at least one first carcass ply; and

forming at least one second carcass ply superposed on the at least one first carcass ply;

forming the at least one annular structure; and

applying the at least one annular structure to a region close to inner circumferential edges of the at least one carcass ply;

wherein forming each carcass ply comprises:

preparing strip lengths, each strip length comprising longitudinal and parallel thread elements at least partly coated with at least one layer of raw elastomer material; and

depositing the strip lengths onto a toroidal support in a substantially U-shaped conformation about a profile in transverse section of the toroidal support;

wherein each strip length comprises:

two side portions that substantially extend in planes orthogonal to a geometric axis of rotation of the toroidal support at mutually-spaced-apart positions in an axial direction;

a crown portion that extends at a radially outer position in a plane substantially parallel to the geometric axis of rotation of the toroidal support; and

two mutually-axially-spaced-apart transition regions that are defined between the side portions and the crown portion, respectively;

wherein the thread elements of the at least one second carcass ply are disposed according to a crossed orientation relative to the thread elements of the at least one first carcass ply;

wherein the crown portions of the strip lengths are disposed consecutively in side-by-side relationship along a circumferential extension of the toroidal support,

wherein edges of circumferentially consecutive strip lengths abut uniformly along their entire crown portions extending between the transition regions,

wherein ~~the~~ each side ~~portions~~ portion of ~~each~~ the strip ~~length~~ lengths ~~cover~~ covers in part or ~~are~~ is partly covered by a side portion of at least one circumferentially consecutive strip length,

wherein forming the at least one annular structure comprises depositing at least one first elongated element in substantially concentric coils to form a first circumferentially inextensible annular insert, substantially in a form of an annulus, and

wherein the respective side portions of the strip lengths are not turned up around the first annular insert.

28. (Previously presented) The method of claim 27, wherein the strip lengths are prepared by cutting actions executed sequentially on at least one continuous strip element incorporating the thread elements in the at least one layer of raw elastomer material.

29. (Previously presented) The method of claim 28, wherein each cutting action is followed by deposition of an individual strip length thus obtained onto the toroidal support.

30. (Previously presented) The method of claim 27, wherein the side portions of circumferentially consecutive strip lengths on the toroidal support converge toward the geometric axis of rotation of the toroidal support.

31. (Previously presented) The method of claim 27, wherein an amount of coverage of the side portions of the strip lengths progressively decreases, starting from

a maximum value at radially inner ends of the side portions until a zero value at the transition regions.

32. (Previously presented) The method of claim 27, wherein the strip lengths are sequentially deposited onto the toroidal support according to a circumferential distribution pitch corresponding to a width of the strip lengths.

33. (Previously presented) The method of claim 27, wherein the strip lengths are sequentially deposited onto the toroidal support according to a circumferential distribution pitch corresponding to a multiple of a width of the strip lengths.

34. (Previously presented) The method of claim 27, wherein the strip lengths have a width corresponding to a submultiple of a circumferential extension of the toroidal support, as measured at an equatorial plane of the toroidal support.

35. (Previously presented) The method of claim 27, further comprising:

sequentially pressing the side portions of each strip length to define regions of increased width close to inner circumferential edges of the carcass structure.

36. (Previously presented) The method of claim 35, wherein the strip lengths are prepared by cutting actions executed sequentially on at least one continuous strip

element incorporating the thread elements in the at least one layer of raw elastomer material, and

wherein sequentially pressing the side portions is carried out on the at least one continuous strip element before execution of corresponding cutting actions.

37. (Previously presented) The method of claim 35, further comprising:

moving the thread elements in the strip lengths apart from each other concurrently with sequentially pressing the side portions.

38. (Previously presented) The method of claim 27, wherein during depositing the strip lengths, at least one of the strip lengths is held on the toroidal support by a suction action produced through the toroidal support.

39. (Previously presented) The method of claim 27, wherein depositing the strip lengths comprises:

laying down each strip length transversely and at a centered position relative to an equatorial plane of the toroidal support;

radially moving each strip length close to the toroidal support so as to form the crown portions of the strip lengths on the toroidal support;

translating opposite ends of each strip length substantially radially close to the geometric axis of rotation of the toroidal support for applying the side portions of the strip lengths to the toroidal support; and

rotating the toroidal support through an angular pitch corresponding to a circumferential distribution pitch of the strip lengths.

40. (Previously presented) The method of claim 27, further comprising:

pressing the side portions of the strip lengths against side walls of the toroidal support.

41-42 (Canceled)

43. (Previously presented) The method of claim 27, further comprising:

coating the toroidal support with at least one sealing layer or liner made of an elastomer material impervious to air prior to forming the at least one carcass ply.

44. (Previously presented) The method of claim 43, wherein coating the toroidal support is carried out by winding at least one ribbon band of an air-proof elastomer material in coils disposed side-by-side along the profile in transverse section of the toroidal support.

45. (Previously presented) The method of claim 27, further comprising:

disengaging the tire from the toroidal support;

introducing an air tube into the carcass structure; and

vulcanizing the tire.

46. (Previously presented) The method of claim 27, further comprising:

vulcanizing the tire; and

stretching the carcass structure during vulcanizing to achieve an expansion of the tire of a linear amount between 2% and 5%.

47. (Previously presented) The method of claim 27, further comprising:

depositing at least one second elongated element in substantially concentric coils to form a second circumferentially inextensible annular insert substantially in a form of an annulus disposed concentrically in a side-by-side relationship relative to the first annular insert; and

forming at least one filling body of raw elastomer material interposed between the at least one first elongated element and the at least one second elongated element.

48. (Previously presented) The method of claim 47, wherein the at least one first elongated element and the at least one second elongated element are deposited into a molding cavity, and

wherein the at least one filling body is formed in the molding cavity.

49. (Previously presented) The method of claim 47, wherein at least one of the substantially concentric coils of the first annular insert, the second annular insert, or the

first and second annular inserts is defined by a continuous spiral of one or more elongated elements.

50. (Previously presented) The method of claim 47, wherein at least one of the substantially concentric coils of the first annular insert, the second annular insert, or the first and second annular inserts is defined by concentric rings of one or more elongated elements.

51. (Previously presented) The method of claim 48, wherein the at least one filling body is formed in the molding cavity by:

interposing at least one annular element of raw elastomer material of predetermined volume between the first and second annular inserts; and

reducing a volume of the molding cavity to compress and deform the at least one annular element until the at least one annular element, the at least one first elongated element, and the at least one second elongated element fill the molding cavity.

52. (Previously presented) The method of claim 48, wherein the at least one filling body is formed in the molding cavity by injecting raw elastomer material between the first and second annular inserts.

53. (Previously presented) The method of claim 47, wherein each annular structure is interposed between at least one first carcass ply and a second carcass ply superposed on the at least one first carcass ply.

54. (Previously presented) The method of claim 47, further comprising:

coating one or more of the at least one first and second elongated elements with at least one layer of raw elastomer material;

wherein each coated elongated element is coated prior to depositing the coated elongated element.

55. (Previously presented) The method of claim 48, further comprising:

magnetically retaining at least one of the first and second annular inserts at a predetermined position within the molding cavity.

56. (Currently amended) A method of making a tire, the tire comprising a carcass structure and at least one circumferentially inextensible annular structure, comprising:

forming at least one carcass ply of the carcass structure;

wherein forming the at least one carcass ply comprises:

forming at least one first carcass ply; and

forming at least one second carcass ply superposed on the at least one first carcass ply;

forming the at least one annular structure; and

applying the at least one annular structure to a region close to inner circumferential edges of the at least one carcass ply;

wherein forming each carcass ply comprises:

preparing strip lengths, each strip length comprising longitudinal and parallel thread elements at least partly coated with at least one layer of raw elastomer material; and

depositing the strip lengths onto a toroidal support in a substantially U-shaped conformation about a profile in transverse section of the toroidal support;

wherein each strip length comprises:

two side portions that substantially extend in planes orthogonal to a geometric axis of rotation of the toroidal support at mutually-spaced-apart positions in an axial direction;

a crown portion that extends at a radially outer position in a plane substantially parallel to the geometric axis of rotation of the toroidal support; and

two mutually-axially-spaced-apart transition regions that are defined between the side portions and the crown portion, respectively;

wherein the thread elements of the at least one second carcass ply are disposed according to a crossed orientation relative to the thread elements of the at least one first carcass ply;

wherein the crown portions of the strip lengths are disposed consecutively in side-by-side relationship along a circumferential extension of the toroidal support,

wherein edges of circumferentially consecutive strip lengths abut uniformly along their entire crown portions extending between the transition regions,

wherein ~~the~~ each side ~~portions~~ portion of ~~each~~ the strip ~~length~~ lengths ~~cover~~ covers in part or ~~are~~ is partly covered by a side portion of at least one circumferentially consecutive strip length,

wherein forming the at least one annular structure comprises depositing at least one first elongated element in substantially concentric coils to form a first circumferentially inextensible annular insert, substantially in a form of an annulus,

wherein the side portions of the strip lengths are not turned up around the first annular insert, and

wherein the carcass structure does not comprise flippers wound about the at least one annular structure.

57. (Previously presented) The method of claim 56, wherein the strip lengths are prepared by cutting actions executed sequentially on at least one continuous strip element incorporating the thread elements in the at least one layer of raw elastomer material.

58. (Previously presented) The method of claim 57, wherein each cutting action is followed by deposition of an individual strip length thus obtained onto the toroidal support.

59. (Previously presented) The method of claim 56, wherein the side portions of circumferentially consecutive strip lengths on the toroidal support converge toward the geometric axis of rotation of the toroidal support.

60. (Previously presented) The method of claim 56, wherein an amount of coverage of the side portions of the strip lengths progressively decreases, starting from a maximum value at radially inner ends of the side portions until a zero value at the transition regions.

61. (Previously presented) The method of claim 56, wherein the strip lengths are sequentially deposited onto the toroidal support according to a circumferential distribution pitch corresponding to a width of the strip lengths.

62. (Previously presented) The method of claim 56, wherein the strip lengths are sequentially deposited onto the toroidal support according to a circumferential distribution pitch corresponding to a multiple of a width of the strip lengths.

63. (Previously presented) The method of claim 56, wherein the strip lengths have a width corresponding to a submultiple of a circumferential extension of the toroidal support, as measured at an equatorial plane of the toroidal support.

64. (Previously presented) The method of claim 56, further comprising:

sequentially pressing the side portions of each strip length to define regions of increased width close to inner circumferential edges of the carcass structure.

65. (Previously presented) The method of claim 64, wherein the strip lengths are prepared by cutting actions executed sequentially on at least one continuous strip element incorporating the thread elements in the at least one layer of raw elastomer material, and

wherein sequentially pressing the side portions is carried out on the at least one continuous strip element before execution of corresponding cutting actions.

66. (Previously presented) The method of claim 64, further comprising:

moving the thread elements in the strip lengths apart from each other concurrently with sequentially pressing the side portions.

67. (Previously presented) The method of claim 56, wherein during depositing the strip lengths, at least one of the strip lengths is held on the toroidal support by a suction action produced through the toroidal support.

68. (Previously presented) The method of claim 56, wherein depositing the strip lengths comprises:

laying down each strip length transversely and at a centered position relative to an equatorial plane of the toroidal support;

radially moving each strip length close to the toroidal support to form the crown portions of the strip lengths on the toroidal support;

translating opposite ends of each strip length substantially radially close to the geometric axis of rotation of the toroidal support for applying the side portions of the strip lengths to the toroidal support; and

rotating the toroidal support through an angular pitch corresponding to a circumferential distribution pitch of the strip lengths.

69. (Previously presented) The method of claim 56, further comprising:

pressing the side portions of the strip lengths against side walls of the toroidal support.

70-71 (Canceled)

72. (Previously presented) The method of claim 56, further comprising:

coating the toroidal support with at least one sealing layer or liner made of an elastomer material impervious to air prior to forming the at least one carcass ply.

73. (Previously presented) The method of claim 72, wherein coating the toroidal support is carried out by winding at least one ribbon band of an air-proof elastomer material in coils disposed side-by-side along the profile in transverse section of the toroidal support.

74. (Previously presented) The method of claim 56, further comprising:

disengaging the tire from the toroidal support;

introducing an air tube into the carcass structure; and

vulcanizing the tire.

75. (Previously presented) The method of claim 56, further comprising:

vulcanizing the tire; and

stretching the carcass structure during vulcanizing to achieve an expansion of the tire of a linear amount between 2% and 5%.

76. (Previously presented) The method of claim 56, further comprising:

depositing at least one second elongated element in substantially concentric coils to form a second circumferentially inextensible annular insert substantially in a form of an annulus disposed concentrically in a side-by-side relationship relative to the first annular insert; and

forming at least one filling body of raw elastomer material interposed between the at least one first elongated element and the at least one second elongated element.

77. (Previously presented) The method of claim 76, wherein the at least one first elongated element and the at least one second elongated element are deposited into a molding cavity, and

wherein the at least one filling body is formed in the molding cavity.

78. (Previously presented) The method of claim 76, wherein at least one of the substantially concentric coils of the first annular insert, the second annular insert, or the first and second annular inserts is defined by a continuous spiral of one or more elongated elements.

79. (Previously presented) The method of claim 76, wherein at least one of the substantially concentric coils of the first annular insert, the second annular insert, or the first and second annular inserts is defined by concentric rings of one or more elongated elements.

80. (Previously presented) The method of claim 77, wherein the at least one filling body is formed in the molding cavity by:

interposing at least one annular element of raw elastomer material of predetermined volume between the first and second annular inserts; and

reducing a volume of the molding cavity to compress and deform the at least one annular element until the at least one annular element, the at least one first elongated element, and the at least one second elongated element fill the molding cavity.

81. (Previously presented) The method of claim 77, wherein the at least one filling body is formed in the molding cavity by injecting raw elastomer material between the first and second annular inserts.

82. (Previously presented) The method of claim 76, wherein each annular structure is interposed between at least one first carcass ply and a second carcass ply superposed on the at least one first carcass ply.

83. (Previously presented) The method of claim 76, further comprising:

coating one or more of the at least one first and second elongated elements with at least one layer of raw elastomer material;

wherein each coated elongated element is coated prior to depositing the coated elongated element.

84. (Previously presented) The method of claim 77, further comprising:

magnetically retaining at least one of the first and second annular inserts at a predetermined position within the molding cavity.

85-91 (Canceled)